In conclusion, I would suggest that the factors most affecting the coleopterous fauna of this habitat are, the physical presence of the stones themselves, the large amount of detritus available, the dampness of the surroundings and the nearby river.

Summary.

A total of thirty-seven species have now been recorded from this habitat. Of these nineteen may be regarded as regular and eighteen (including two formerly regular species that are no longer found) as casual species. It is shown that the majority of the species belong to two habitat-groups, the lapidicoles and the detriticoles.

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Cercyon laminatus Sharp (Col. Hydrophilidae) New to Britain; with Corrections to our List of Species, and Further Notes

By A. A. Allen, B.Sc., A.R.C.S.

Cercyon laminatus Sharp (1873) is a very distinct species which cannot be confused with any other occurring in Britain. It is one of the larger members of the genus, and except for its size and colour (the former a little variable) has, as its author remarks, quite the appearance of a species allied to *litoralis* Gyll. or *depressus* Steph., on account of its relatively elongate, flattish, loosely-built form. The shape is oblong-oval with elytra widest at or rather behind middle, and sides of pronotum rounded before the obtuse hind angles so as to form an angle with sides of elytral base in dorsolateral view. The coloration is distinctive: head and most of underside black, upperside pitchy-yellow-brown with pronotum rather paler at sides; apex and margins of elytra (and often less clearly, base and sutural region), metasternal lamina, antennae except club, palpi, and legs, a lighter yellowish or straw-colour. Also highly characteristic are the very large eyes (not noticed by Sharp in his description), very narrow scutellum, unusually elongate antennal club, and very narrow, keel-like, almost blade-like mesosternal lamina (whence the name of the species). These features together render the insect quite unmistakable, and somewhat isolated within the genus. The puncturation is fairly fine and uniform, the striae are impressed behind, and the limbs long.

Recorded by Sharp (1873) from Hiogo, Japan, in dung — and also (according to Hansen, 1964) under seaweed on the coasts. Some years ago Mr J. Balfour-Browne determined for me as this species two examples of a *Cercyon* obviously new to us which had flown to mercury-vapour light here on 6th and 8th August, 1959. A third was captured in the same way on 22nd June of the next year. The species had previously been taken, also at light, in several North German localities, chiefly in the area between Hamburg and Berlin, but only since 1956; and is said to be general by now in the Hamburg district; mostly at ultraviolet (m.v.) light in damp situations in warm still weather. In an interesting note Lohse (1959) gives details of its occurrence in many parts of Germany during the three years following its discovery there, and points out that it has already become established over a large part of central Europe and may well be synanthropic. In Denmark (Hansen, *l.c.*) the species has occurred rarely so far and in the same conditions as here. Dr Hansen notes that it is occasionally taken (elsewhere in Europe) in compost, refuse, and the dung of pigeons or fowls, but always more often at m.v. light. The small tally of British captures to date is completed with two further specimens at my lamp on 17.vii.67 and one more on 30.vi.68 and another which I have just recently seen, taken by Sir Eric Ansorge at Chalfont St. Peter, Bucks., in his light-trap (1.vii.68).

This interesting addition to our list is yet another in the series of Oriental species that have in recent times colonized or obtained a foothold in western Europe, having been originally described from Japan; examples are *Philonthus rectangulus* Shp., *P. parcus* Shp., and *Atomaria lewisi* Rtt. The latest of this class to be found in Britain — another Sphaeridiine—is *Cryptopleurum subtile* Shp. (see Johnson, 1967); it too occurred at light in Germany at about the same time and in the same area as the *Cercyon*, and has now spread similarly; I captured a single specimen at the lamp here two years ago (Allen, 1968). The great attraction of artificial light (at all events ultraviolet) for these two species is curious, since, although their native congeners certainly come to it, in my experience they do so only very occasionally—yet many of the genus *Cercyon* abound almost everywhere. On the other hand *C. laminatus* has not yet been taken in Britain in the field, and the breeding-habitat of the Blackheath specimens is unknown; I have never found it in the garden (where many of the genus occur) or elsewhere. It seems possible that the large development of the eyes in this species is not unconnected in some way with its marked lychnophilic tendencies. The nights on which my specimens appeared were quite exceptionally warm and close, and a host of insects came with them.

C. aquatilis Donis. (1932). — This so-called species, described on two examples from the willow swamp at Windsor, must be sunk as identical with *C. haemorrhoidalis* F. (=*flavipes* F.) I reached this conclusion through examining the type and paratype in Donisthorpe's collection and was glad to learn that Mr Balfour-Browne fully agreed. In fact *aquatilis* is not even abnormal *haemorrhoidalis*, but quite typical. Donisthorpe must have been misled by the habitat into assuming it to be a species near *C. marinus* Thoms. (=*aquaticus* Lap.)—with which he compares it—or at any rate a marsh-dwelling one; the very common dung and compost-feeding *C. haemorrhoidalis* clearly never occurred to him

as a possibility. The beetles had most likely been swept off the adjacent fields into the pothole in the swamp by previous flooding.

C. bifenestratus Küst. — Mr Balfour-Browne considered that this species should be struck off the British list, as he was satisfied that it had been introduced in error; the exponents being only *C. marinus* Thoms. That was the case, at least, with the single representative of *bifenestratus* in the Power collection—one of Newbery's original catch from 'the broad ditch near Sandown Castle, Deal' (vii.96; *Ent. Rec.*, **11**: 265). Even so, the species could perhaps occur with us and a look-out should be kept for it. The characters are given in Fowler & Donisthorpe (1913), but there is a further important difference in sternal structure (see Vogt, 1969: 190, figs. 9, 10).

(Fowler, *l.c.*, remarks at the end of his note on this species: "Colour differences are usually worth very little consideration in the genus *Cercyon* except in two or three well-marked species". With this estimate I cannot fully agree. Provided they are not too narrowly defined, and, of course, that the maturity of an individual is taken due account of — in our species sufficiently indicated by a quite black head—, colour characters can be decidely helpful, not least those of the antennae and palpi. The existence of numerous colour-aberrations in Continental catalogues does not invalidate this conclusion, for, as is so often the case, our insular races seem on the whole a good deal less subject to such variation. Such a definite form as the var. *binotatus* of *C. litoralis* will naturally give no trouble).

C. subsulcatus Rey.—This name must disappear from our list and be replaced by *sternalis* Sharp (1918), as it turns out that authors have been in error in synonymizing the two species. Sharp made no reference to *subsulcatus*, but a year after his paper was published Deville suggested that Sharp's *sternalis* might be the same, without in any way affirming their identity. Both in Britain and on the Continent the idea was adopted, and it was not till 1949 that Méquignon showed the true *subsulcatus* to be a Mediterranean insect (found chiefly in the Camargue), while *sternalis* was widely spread in France. Some have doubted his interpretation of *sternalis*, believing it to be *convexiusculus* Steph. (see below). Vogt, however (p. 183-5) conclusively proves that Méquignon was, after all, correct; Rey's species differs decisively from Sharp's in most of the important characters—though nearest to it. As it seems confined to southern France, it need not further concern us here. (For *sternalis* and its characters, etc., see the final part of these notes).

C. granarius Er.—Introduced as British in 1879, and included with reserve by Fowler (p. 260), who gave two localities (Birmingham district and Walton-on-Thames). Sharp (p. 275) stated that he had but one specimen, given to him long before by Crotch. However, Mr Balfour-Browne has examined this and found it to be only *convexiusculus*, and tells me he has not seen the true *granarius* from Britain. I think it very possible that Fowler's '*lugubris*' (now a synonym of *convexiusculus*) was largely *sternalis*—not at that time separated while in any case his *granarius* was almost certainly *convexiusculus*, and the same is probably true of any other British records of the former. It is to be noted, however, that Fowler assigns the mesosternal characters correctly, having most likely taken them from the literature.

I have never seen the present species, which has a simple flattish type of sternum without a lumen (Vogt, p. 190, fig. 18) and, according to Reitter (1909), the elytral intervals *as shining as the pronotum* with fine *and equally thick* puncturation becoming obsolete behind. The italicized points *taken together* should prevent confusion with either *analis* Payk. or *convexiusculus* Steph., with either of which it might possibly be found mixed in some of our collections. *C. granarius* appears to be uncommon in Germany, Denmark and Sweden, in wet situations. It could perhaps be found here (the smaller obscurer Cercyons not being in much favour among collectors), but, until it is, it would be best omitted from our list.

C. pumilio Sharp (1918).—It is virtually certain that this is only a dwarf example of *sternalis* Shp. The 'species' was based (p. 277) on a solitary individual from Hammersmith Marshes; Sharp admitted it was 'closely allied' to his *C. sternalis*, which he had described from the latter locality, and in fact there appear to be no real differences that reduction in size would not account for. This was also Mr Balfour-Browne's opinion, and it is adopted by Vogt (p. 189). Accordingly, *pumilio* should be sunk as synonymous with *sternalis*.

Notes on the 'subgenus' Cercyon Rey.—Our three species *convexiusculus* Steph., *sternalis* Shp., and *tristis* Ill., together with others in Europe and America, comprise a group of very closely allied forms; of which those known to Rey were placed by him (1886) in his subgenus *Cercyon* (primarily on characters of the meso- and metasternum). Sharp (1918: 274) considered that it should be raised to generic rank; but fortunately we need not follow him in this, since Vogt (pp. 187-190), after a thorough discussion of the question, concludes that there is no valid basis for so treating it. He draws attention to the significant fact that throughout the genus the more important interspecific differences of sternal structures frequently cut across the obvious affinities of species; so that if it is used for grouping, nearly related species will often be widely separated and a patently artificial system will result. Thus while the *convexiusculus* group species are plainly symphyletic, another which on all counts belongs elsewhere—*bifenestratus* Küst.—has a similar type of sternum, and indeed Rey included it with them as a *Cercyon*; further, there are other even more distant species showing a tendency to the same structure. It is evidently a plastic or labile character within the genus, probably (as Vogt suggests, p. 191) in some way adaptive and influenced by habitat; for those species with the most advanced sternal structure are all found near water, and not in dung or compost like most of the others—though the correlation is not perfect.

The three very similar British species included by Sharp under *Cercyon* are the ones most liable to be mixed in collections, so it will be as well to say something of them and give a revised key. Sharp (p. 275) included also *granarius* Er., but, as we have seen, the insect on which he seems to have relied for his knowledge of that species was misdetermined and the true *granarius* does not belong to the present group.

Looked at from below or from the side, both the meso- and metasternal laminae in these species (i.e., the median shiny and punctate part of the mid- and hind-breast) are seen to be much developed, being considerably raised above the level of the coxae and having under their point of approximation or contact a distinct space, or 'lumen' (Sharp's term), which can readily be seen from the side even in ordinarily carded

specimens whose underside is clean and not too heavily clogged with gum. The size or form of this space and/or the length, breadth, etc., of the two laminae differ in each species of the group. The lateral view is figured by Vogt† (p. 190) for them and most of the mid-European (and British) Cercyons; these instructive figures should be studied by anyone interested in recent evolutionary trends within the genus.

(Small convex black species with apex of elytra lighter, legs and antennae, except club, rufotestaceous to pitchy; elytra duller than pronotum, the intervals alutaceous, at most finely punctured, much more finely than striae or pronotum and less thickly than the latter; and only, if at all, in the front half. Sternal structure, see above; aedeagus characteristics for each (Vogt, p. 178). In damp places, flood rubbish, etc.)

1/2 Striae almost fading out towards apex, except for the one or two innermost, intervals quite flat, sculptured as 4/3; apex very gradually and obscurely lighter. Lumen (see above) intermediate in size, distinctly open; mesosternal lamina larger, convex in side-view, broader. (Palpi mostly dark, legs piceous Usually larger and broader) . . . *tristis* Ill. (=*minutus* auct.)

2/1 Striae distinct throughout : apex plainly reddish; lumen less open, mesosternal lamina smaller, flatter. (Usually smaller and narrower.)

3/4 Striae not deepened towards apex, intervals quite flat, punctate in front as a rule but sometimes hardly visibly, often less dull; reddish colour at apex merging into the black; palpi* with segment 4 (last), and sometimes 2 also, darker than 3, or the whole more or less blackened. Lumen small, not quite closed, apposed ends of laminae blunt in side-view; the mesosternal narrower, both laminae scarcely alutaceous and very shining. (Legs often lighter) ..... *convexiusculus* Steph. (=*lugubris* Payk.)

4/3 Striae a little deepened towards apex, where the intervals are very slightly convex; these hardly visibly punctuate even in front, with a dull sheen (*'sericeo-subopacis'*, Sharp); reddish colour at apex well marked off from the black; palpi wholly clear testaceous or brownish-yellow. Lumen large, practically closed, apposed ends of laminae in side-view acute, often just overlapping; the mesosternal broader, both laminae plainly alutaceous. (Legs often darker) ..... *sternalis* Shp. (=*subsulcatus* auct., nec Rey)

The colour differences, though not to be relied on entirely, nevertheless appear constant enough to be useful, either for a preliminary sorting or as confirmatory characters. Broadly speaking one may say that 'palpi paler than legs' points to *sternalis*, 'legs paler than last segment of palpi' to *convexiusculus*, and 'palpi *and* legs somewhat dark' to *tristis*. Specimens unnaturally darkened by having been kept too long in laurel etc. will not, of course, show clearly the differences of the elytral apex; as always in such cases, they are best degreased long after setting and dried rapidly on a hotplate, when the originally paler parts will often be restored to something like their pristine clarity.

As regards incidence, etc., Sharp (1918) apparently considered all three species rare, with *tristis* the least so and *sternalis* the most. My experience is rather the reverse. I have met with only a single *tristis* (Windsor, 10.vii.37) but have found *sternalis* not rarely in several places: Ruislip Reservoir, Middx.; Wicken Fen; Allhallows-on-Sea, Kent; and Windsor (one, with the last). *Convexiusculus* I have taken only at Blackheath, beside a pond long since drained, and one at London Colney, Herts. The late Joesph Collins (1919: 68) had a long series from Yarnton, Oxon., determined by Sharp as *sternalis*, but only three *convexius-*

†He also figures the aedeagus of all the mid-European (and British) species (pp. 176-8).

*Maxillary, of course, as in other cases where 'palpi' alone are referred to.

culus from as many places in the same county, and a single *tris'is* ('Oxford'). Joy (1932) marks the last-named as 'local', but both the others 'rare'. I can record *sternalis* also from Hurn (Hants.), Pevensey and Chichester (P. Harwood, in my collection) and one in the Power coll. from near Lewes; and *convexiusculus* from Wye and Westerham (Kent), Bishop's Stortford, and Killarney (P. H., coll. A.A.A.); Eltham and Shooters Hill (Kent) (Sussex) one (Power coll.). There seems to be no marked differences in habitat, but *sternalis* at least is not averse to coastal and brackish localities.

Vogt (p. 185) shows that var. *intermixtus* Sharp was rightly assigned by its author to *lugubris* Payk. (i.e. *convexiusculus*); of which it can only be regarded as a small narrow form, such as occur in many of the genus. Its ascription to *C. tristis* in certain catalogues (first by Knisch, 1924) is erroneous.

Acknowledgments

I should like to thank Herr Vogt for sending me (unasked) his highly interesting and valuable paper on the genus, which by a happy chance arrived as I was about to prepare these notes; and Mr J. Balfour-Browne for the original determination of *C. laminatus*, for his conclusions as to several species listed as British, and for permission to make use of these and of the British Museum collections.

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63 Blackheath Park, London, S.E.3. 9.iv.1969

CORRECTIONS: Reference my note on *Caenophila subrosea* Stephen at p. 179 of the June issue. In the 6th line down, for "stimulate" read "simulate". In 7th line down, insert "no" between "were" and "casualties" so as to read "There were no casualties in the pupal stage". — J.M.C.-H.